

Appendix 5-3: STA Vegetation Survey Results

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The Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Long-Term Plan) and Everglades Forever Act Stormwater Treatment Area (STA) permits require the assessment of vegetation extent and condition through annual aerial imagery. While the original intent through the Long-Term Plan was to assess biomass phosphorus storage in a given cell, aerial surveys alone do not provide that level of information. Later revisions of the Long-Term Plan focused on simply acquiring imageries. The information collected is used for several purposes: (1) documentation of area coverages of emergent aquatic vegetation (EAV) versus submerged aquatic vegetation (SAV) and open water based on aerial images, (2) mapping dominant vegetation types on an as-needed basis, (3) monitoring changes in vegetation density in problematic cells, and (4) assessing hydraulic condition as influenced by presence or absence of vegetation. Future goals include being able to relate coverage and density to STA performance, estimate phosphorus storage in biomass, and determine water hydraulic effects of vegetation resistance.

The 2010 digital imagery was collected on May 10, 21, and 23, 2010, utilizing a Vexcel UltraCamX large format digital camera mounted in a Cessna 208 Grand Caravan aircraft at an approximate altitude of 13,500 feet above ground level. Raw images were processed using Microsoft Vexcel UltraMap 1.0. Stereo imagery was captured with 60 percent overlap between adjacent frames and 40 percent overlap between adjacent flight lines. STA vegetation cover maps for STA-1E and STA-1W, STA-2 and STA-3/4, and STA-5 and STA-6 (**Figures 1 through 3**, respectively) were produced by performing unsupervised classification on the color infrared bands of this imagery. Image processing software was also used to reclass, filter, and aggregate the initial classification. Expert knowledge and ground-truthing of STA vegetation composition were employed to conduct final edits, calculate acreage, and output results cartographically in GIS software. One known limitation of these imageries is their inability to specifically discern areas covered with SAV versus open areas in a wetland environment. The following maps and estimates summarize areas covered with EAV versus areas with SAV, open water, or SAV/open water.

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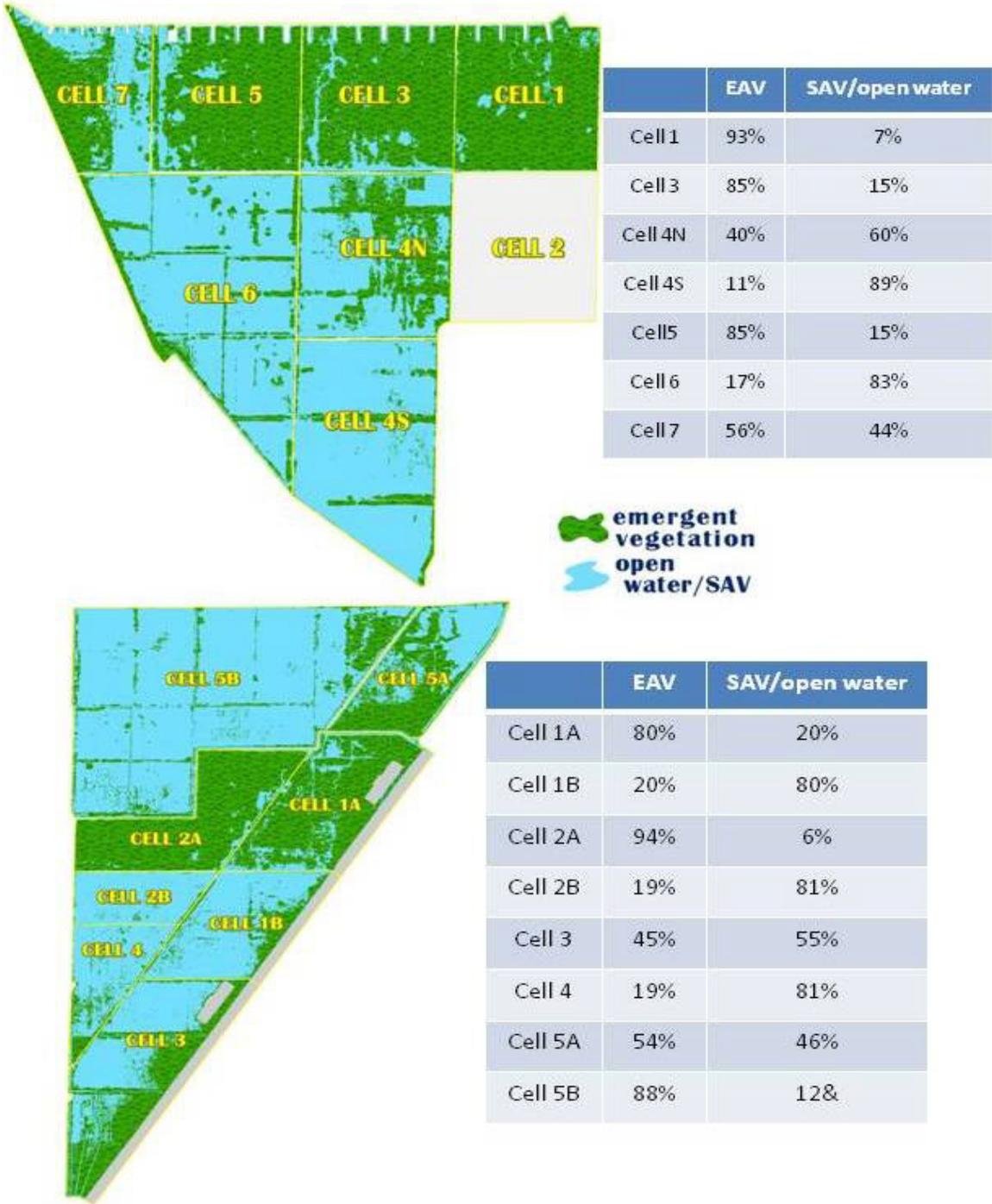


Figure 1. Emergent and submerged aquatic vegetation (EAV and SAV/open water) in Stormwater Treatment Area 1E (STA-1E) (upper) and STA-1W (lower) on May 23, 2010.

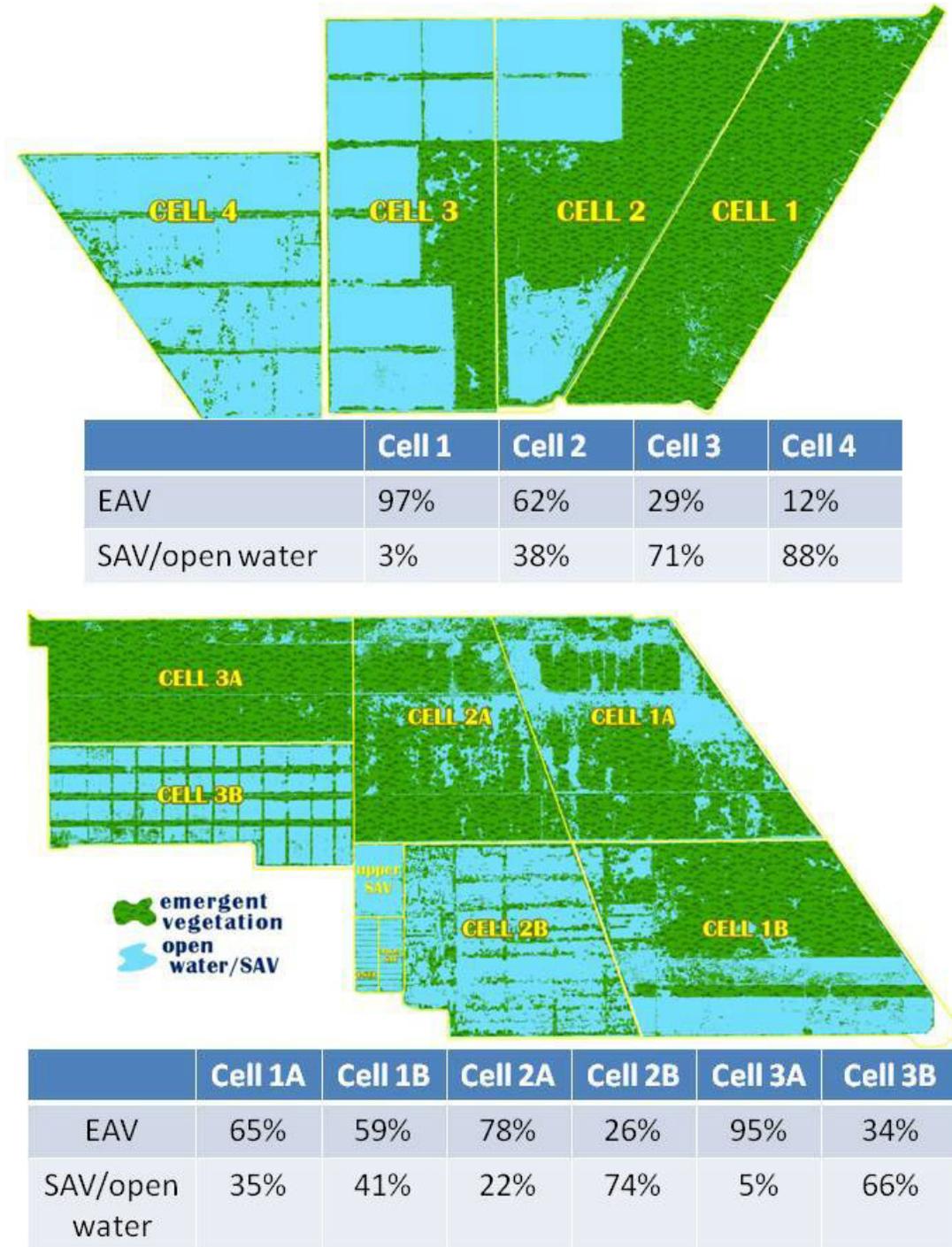
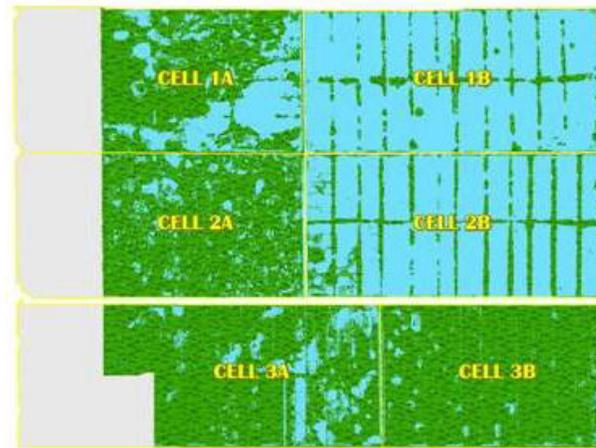
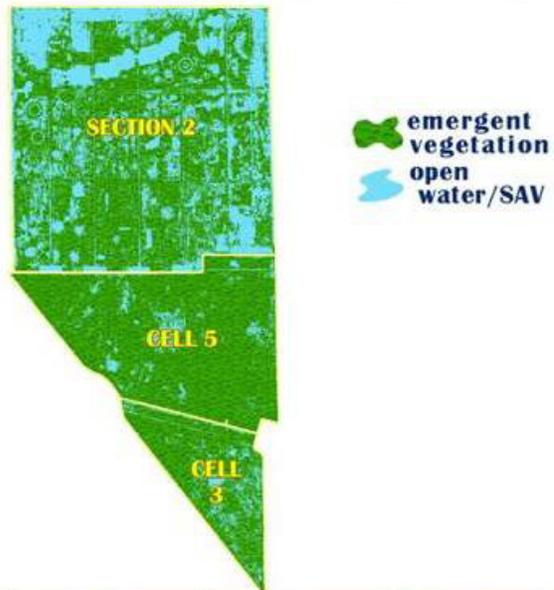


Figure 2. Emergent and submerged aquatic vegetation (EAV and SAV/open water) in STA-2 (upper) and STA-3/4 (lower) on May 23, 2010.



	Cell 1A	Cell 1B	Cell 2A	Cell 2B	Cell 3A	Cell 3B
EAV	64%	12%	85%	19%	83%	94%
SAV/open water	36%	88%	15%	81%	17%	6%



	Cell 3	Cell 5	Section 2
EAV	83%	92%	61%
SAV/open water	17%	8%	39%

Figure 3. Emergent and submerged aquatic vegetation (EAV and SAV/open water) in STA-5 (upper) and STA-6 (lower) on May 23, 2010.